

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-007222**Date Inspected:** 23-May-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 1900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 700**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG and Tower Fabrication**Summary of Items Observed:**

CWI Inspectors: Mr. Lu Lefeng, Mr. Li Ming, Mr. Li Jia

On this date CALTRANS OSM Quality Assurance (QA) Inspector, Mr. Paul Dawson, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China, for the purpose of monitoring welding and fabrication of the San Francisco / Oakland Bay Bridge (SFOBB) components. The QA Inspector observed the following:

Paint / Blast Bay 2

The QA Inspector observed ZPMC magnetic particle Inspector Mr. Bo Tinrui performing magnetic particle inspections of arc strike removal areas on the interior of East Tower Lift 1 between elevation 18 meters and 28 meters where QC personnel had marked locations of arc strikes on the base material. This section of the tower had previously been grit blasted and since the tower shaft is laying in a horizontal position the bottom of the tower is covered with blasting grit and was not visually inspected to locate or remove arc strikes. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

Tower Bay 11

The QA Inspector observed ZPMC welder Mr. Yang Lei, stencil 040690 is using welding procedure specification WPS-B-T-2332-B-T5-F to deposit shielded metal arc weld ESD1-FBSA4-2A/2C. The QA Inspector observed that the base material where weld was made had been preheated to above 110 degrees Celsius and a ZPMC QC

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Inspector is monitoring this welding. The QA Inspector measured a welding current of approximately 225 amps and the welding electrodes are being stored in a heated container. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

Tower Bay 10

The QA Inspector observed ZPMC welder Mr. Yang Zhaoyin, stencil 047470 is using welding procedure specification WPS-B-T-4221-B-U3b-2 to deposit shielded metal arc weld ESD1-FASA4-2A/E-4A. The QA Inspector observed that the base material where weld was made had been preheated to above 110 degrees Celsius and a ZPMC QC Inspector is monitoring this welding. The QA Inspector measured a welding current of approximately 235 amps and the welding electrodes are being stored in a heated container. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

The QA Inspector observed ZPMC welder Mr. Yang Zaihua, stencil 040669 is using welding procedure specification WPS-B-T-4221-B-U3b-2 to deposit shielded metal arc weld ESD1-FASA4-2A/E-4A. The QA Inspector observed that the base material where weld was made had been preheated to above 110 degrees Celsius and a ZPMC QC Inspector is monitoring this welding. The QA Inspector measured a welding current of approximately 245 amps and the welding electrodes are being stored in a heated container. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

The QA Inspector observed ZPMC welder Ms. Cao Xiachua, stencil 051413 is using welding procedure specification WPS-B-T-2221-U2b-S-2 to make submerged arc groove weld NSD1-A166-E/J-52B. The QA Inspector observed ZPMC Quality Control personnel monitoring this welding and the QA Inspector measured a welding current of approximately 700 amps and 29.5 volts. The QA Inspector observed ZPMC had preheated the base material using electric heating elements. Items observed on this date appeared to generally comply with applicable contract documents.

The QA Inspector observed ZPMC welder Mr. Yun Chuanjin, stencil 503060 is using welding procedure specification WPS-B-T-2221-U2b-S-2 to make submerged arc groove weld NSD1-A166-E/J-32B. The QA Inspector observed ZPMC Quality Control personnel monitoring this welding and the QA Inspector measured a welding current of approximately 675 amps and 31.6 volts. The QA Inspector observed ZPMC had preheated the base material using electric heating elements. Items observed on this date appeared to generally comply with applicable contract documents.

The QA Inspector observed ZPMC welder Ms. Hua Guimei, stencil 050295 is using welding procedure specification WPS-B-T-2221-U2b-S-2 to make submerged arc groove weld NSD1-A166-E/J-113B. The QA Inspector observed ZPMC Quality Control personnel monitoring this welding and the QA Inspector measured a welding current of approximately 690 amps and 30.0 volts. The QA Inspector observed ZPMC had preheated the base material using electric heating elements. Items observed on this date appeared to generally comply with applicable contract documents.

ZPMC issued "Inspection Notification Sheet" #3184 informing QA that ZPMC has completed ultrasonic (UT) inspections of Lift 4 South Tower Skin "A" weld SSD1-FASA4-1A/E-7 and it is available for QA to perform ultrasonic inspections of the weld. The QA Inspector observed the weld is very hot due to ZPMC having just

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completed heat straightening of the base metal and heat affected zone adjacent to this weld. The Project Special Provisions "Welding Quality Control" section states: "Non-destructive testing (NDT) shall not be performed until after heat straightening has been completed." This QA Inspector informed ZPMC QC Representative Mr. Shen Xuejun that since ZPMC performed heat straightening of the weld zone that ZPMC needs to perform another ultrasonic inspection of this weld. Mr. Shen Xue jun agreed that another ultrasonic inspection of this weld is required and that he will ask ZPMC ultrasonic Inspectors to reinspect this weld. Since ZPMC needs to perform another ultrasonic inspection of this weld, this QA Inspector did not perform ultrasonic inspections of this weld.

OBG Assembly

The QA Inspector observed ZPMC welder Mr. Li Shuliang, stencil 048801 is using welding procedure WPS-B-T-2132 to make flux cored fillet weld SEG002C-038 near OBG panel point 19. The QA Inspector observed a welding current of approximately 330 amps and 28.9 volts. Items observed on this date appeared to generally comply with applicable contract documents.

The QA Inspector observed ZPMC welder stencil 053604 is using welding procedure WPS-B-T-2132 to make flux cored fillet weld SEG002C-038 near OBG panel point 19. The QA Inspector observed a welding current of approximately 320 amps and 34.4 volts. The QA Inspector informed ZPMC QC CWI Mr. Li Jia that the welding voltage was approximately 34.4 volts and the QA Inspector asked Mr. Li Jia if this was an acceptable voltage. Mr. Li Jia said based on the welding procedure specification this voltage was too high. By the time this discussion was made the weld had been completed and the welder had disconnected the welding machine and he was leaving the area. Mr. Li Jia said he will be sure to verify the voltage the next time a weld is to be made with this welding machine. Items observed on this date do not fully comply with applicable contract documents.

Summary of Conversations:

See above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Eric Tsang phone: 150-0042-2372 , who represents the Office of Structural Materials for your project.

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| Inspected By: | Dawson,Paul | Quality Assurance Inspector |
| Reviewed By: | Clifford,William | QA Reviewer |
